

and so remained until 4h. 10m. 50s., when a cloud obscured the image and prevented further observation. The times were carefully determined by comparison with the noon signal on the Navy Department building which can be seen from the Weather Bureau building.

As the diameter of Mercury during its transit in 1894 was about 10 seconds, and as no spot was seen by Mr. Dean on February 3, 1898, we must infer that the small moon required by Waltemath's theory does not exist.

Dr. Waltemath states that:

One hundred and six anomalistic rotations of the new satellite are almost exactly equal to the 35-year period in climatic changes established by Professor Bruckner, and that, therefore, the existence of this satellite may have an especial interest to meteorologists.

On this point the Editor must differ with him inasmuch as we can not see any reason why either the small hypothetical or the large and actual satellite of the earth should have any appreciable influence, at the present time, upon our meteorology.

RECENT EARTHQUAKES.

December 29, 6^h 32^m 43^s a. m., Port au Prince, Hayti, W. I., Prof. T. Scherer reports as follows:

A severe earthquake was experienced at Port au Prince lasting one minute and thirty-one seconds. The following are the conclusions to be drawn from the curves traced by the Secchi seismograph at the meteorological observatory of the College of St. Martial.

The entire phenomenon consisted of five consecutive shocks, the total duration of which was forty-eight seconds, and of a series of feeble movements very perceptible to an attentive observer. The first shock lasted eight seconds, it began from east-northeast and ended from west-southwest. The vertical component was quite strong at about the fifth second. The movement immediately began with more force in the horizontal direction and less in the vertical; this lasted eleven seconds, and the direction from which it came was more toward the east. The third shock lasted three seconds, and was characterized by a very regular oscillatory movement. The fifth shock was the strongest, lasted ten seconds, began from the northeast, and died away in the southwest, with a vertical component that was scarcely appreciable. All the other movements, after the forty-eighth second, were feeble, with the same horizontal direction. During all this time the seismic pendulum described ellipses in the sand whose major axes varied from northeast through the south to southwest. The Bertelli microseismometer was for a long time agitated and finally maintained a north-south direction.

The same earthquake was felt in the neighborhood of Port au Prince and with the same features. It seems to have been very violent in the interior of the island of Dominica.

January 1, 5:15 a. m., Peachland, Cal., earthquake, vibration east and west; duration, 2 to 3 seconds.

11th, Lakeside, Wash., slight shocks of earthquake.

13th, Laramie, Wyo., slight shock of earthquake about midnight, duration about fifteen seconds.

14th, Lakeside, Wash., slight shocks of earthquake.

15th, Lakeside, Wash., slight shocks of earthquake.

26th, Helena, Ark., 7:35 p. m., slight earthquake, no serious damage.

Prof. Edward W. Morley, of Adelbert College, Cleveland, Ohio, and Prof. C. F. Martin, of the Weather Bureau at Washington, report that no earthquakes disturbed their respective seismographs during January.

THUNDERSTORMS IN CALIFORNIA.

Mr. Barwick has called the attention of the Editor to an article on the above subject that had been overlooked by him in preparing his notes for the MONTHLY WEATHER REVIEW for December, 1897, page 539. This article is by Mr. John D.

Parker, and calls attention to the infrequency of thunderstorms in southern California. (See the American Meteorological Journal, June, 1895, Vol. XII, page 51.) Among other things, Mr. Parker says:

The Weather Bureau has reported only two electrical storms at San Diego during the past sixteen years. One of these occurred on August 27, 1894, and it may be taken as a type of all the electrical storms in this region. On that day there prevailed a close, sultry atmosphere, with a stoppage of the sea breeze, replaced by fitful currents of hot air from the desert, and a filmy vapor cast a slight veil over the face of the sun. About midday the observer at San Diego, from the roof of his building, saw far to the south fifteen or twenty very small thunderheads, appearing conical above, with flat bases. These thunderheads moved slowly northward along the San Jacinto mountain range, and arrived opposite San Diego about sunset, where, by the enlargement of the visual angle, they seemed to fill the whole heavens with black masses of cloud. The edge of this Sonora brushed by San Diego that evening, with an electrical display which was quite vivid in the mountains.

Lightning sometimes plays a little among the clouds far out over the ocean, and occasionally thunder mutters in the mountains, but the Weather Bureau reports that during the last sixteen years not a single thunderstorm arising from general cyclonic action has occurred at San Diego. The thunderstorms of this region are Sonoras, that move northward two or three times a year from Sonora and contiguous regions, where they originate. They seem to be formed, like ordinary thunderstorms, from vapors evaporated from the Gulf of California and regions lying adjacent, and, moving northward along the San Jacinto Range on both sides of the mountains, exhibit electrical displays until their forces are exhausted and they are dissipated.

The explanatory hypotheses suggested by Mr. Parker in the rest of his article are suggestive and interesting, but need a further elaboration before arriving at a satisfactory solution of the problem.

SNOW ROLLERS.

Mr. T. B. Jennings, section director, in his report of the Kansas section for January, says:

A decidedly unusual phenomenon occurred in Saline County during the snowstorm on the 14th, which would indicate that the conditions which produce hailstorms in warm weather may prevail in cold weather, the temperature for the day ranging between 34° and 25°. Over a narrow belt about 12 miles long, extending from southeast of Bavaria to north of the Saline River, late that evening, a fall of snowballs occurred, ranging "from the size of baseballs to half-bushel measures." They do not seem to have been hard, yet they were still to be seen scattered about the fields by persons who went out the next Sunday, the 16th, to view them.

As freshly fallen snow is often rolled into balls and cylinders by a gentle wind, we presume that the balls in Saline County may have been a case of "snow rollers."

BRIGHT METEORS.

Notices in the daily press have been published with regard to a bright meteor observed at 1 p. m. at San Jose, Cal., by Mr. Paddington of the Lick Observatory. It was seen in the west at an elevation of about 8° above the horizon, moving rapidly toward the north in a path slightly inclined toward the earth. It increased in brightness along its course and disappeared suddenly in a clear sky.

Reports of a great meteor seen at Dubois, near Boise City, Idaho, about January 25, have been received, but no reliable details are given.

NOTES FROM THE REPORTS OF STATE SECTIONS.

MONTANA.

Mr. Walter A. Clark, of Choteau, Mont., proposes to experiment with the box kite for carrying up the cold wave, or norther, flag signal.

The Secretary of Agriculture has directed that the voluntary observers and the Climate and Crop correspondents of the Weather Bureau, be included among those to receive the seeds gratuitously distributed by the Department.

Mr. Coe, of Kipp, Mont., says: "Probably there is no locality in the Western States where the chinook phenomena are so prettily illustrated